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THE
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☞See advertisement on last page.

Poetry.

TO THE GOLDEN EAGLE.

King of the air thy pinions sweep,
Like tempest clouds the azure deep
Of the untraversed sky;
Thou hast no partner in thy state,
No envious rival that can mate
Thy majesty on high!

To the earth's sublimest peak,
Where nought but muttering thunders speak,
Is but a resting stone—
When thou hast taken thy viewless flight
Through climes magnificently bright,
Traversed by light alone!

Ambition is the mark of mind—
The type of genius unconfined—
And thine is proud and high;
For thou wouldst reach the star of day,
To bathe in his eternal ray,
Amid the golden sky!

How swells thy soul when thou art borne
Up to the vermiel skies of morn,
~~On heavenly wing to rove.~~
As if 'twere true that thou didst stand
Upon the golden-sceptered hand
Of old Olympian Jove!

UNION.

BY C. D. STUART.

Why link we not our trembling hands
And all our joys and sorrows blend,
Since crossing o'er the desert sands
We have a common aim and end.

The rich, the poor, the bond, the free,
This lesson surely ought to learn,
That gliding down life's stormy sea,
Their barques to one broad haven turn.

The same rough tide impels beneath;
The same fixed light shines out above;
Our common fate is pain and death,
Our hopes the same—why not our love?

Ah! let us break the chain that binds
Each single shallop in the foam,
And bravely trust the commmon winds
To fill our sails and waft us home!

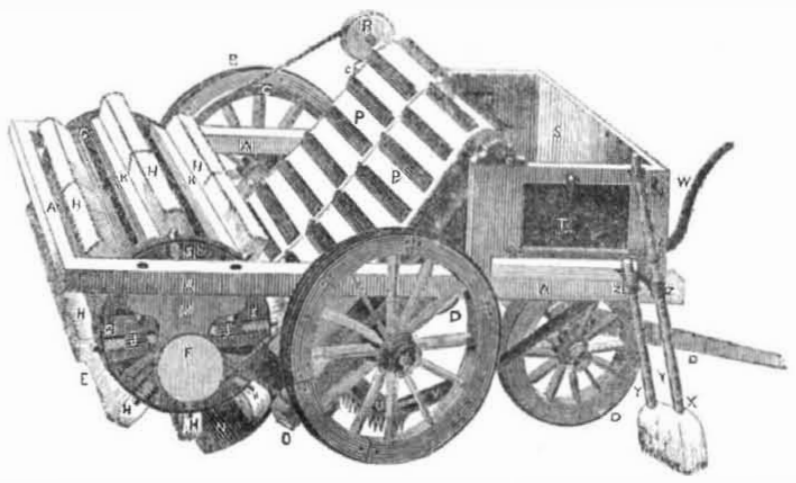
MEMORY OF THE PAST.

When backward through departed years,
On memory's wing we stray,
How oft we find a source of tears,
Along that wasted way!
The heart will vainly seek the light
That rested there before,
And sadly turn to mourn the blight
Of all it loved of yore.

We watch for footsteps that once came
To breathe the twilight vow—
We listen for the silvery tone
Of voices silent now—
We gaze on old, familiar things,
And marvel that they bear
No gladness to our spirit's wings
Like that which once was there.

"Drink water," says the Pharmaceutical Times, "to be really wholesome, must contain, besides atmospheric air, a certain proportion of carbonic acid gas. Distilled water, rain water and melted snow, are, therefore, properly speaking, unfit for drink."

BISHOP'S STREET CLEANING MACHINE.



This is an invention of Mr. C. H. Bishop of Easton, Pennsylvania, which has operated extremely satisfactory in a number of trials made by it. The utility of such a machine as this needs no second thought especially for such streets as those of our own city. For all the abundance of water supply in this city, and the great expense yearly incurred for street cleaning, it is a lamentable evil that our most business streets and thoroughfares are scarcely passable for foot passengers in wet weather. The above machine is intended to remedy this evil. The inventor has applied for a patent.

EXPLANATION.—A A A A, frame of machine; B B, Driving wheels; C C, belt pulleys; D D D front wheels and pole! E, brush wheel; F, pulley of the brush wheel; G G, heads of brush wheel; H H, brushes; I I, Screws regulating brushes; J J, ends of Brush clamps: K K Bars steadying brushes; M, blocking and bolts to Brush wheels; N, sweeping or dirt planes; O, cross bar carrying do; P P, elevators; Q Q, Sloping pieces carrying lower elevator roller; R, elevator pulley; S, body or dirt chamber; T, doors or shuts; U, Drag rake; V, one of the arms of do; W, lever working do; X, Gutter cleaner; Y Y, staves of do; Z Z, sockets and key; *b b*, hook and loop for fastening up when not in use; *c c*, journal boxes.

The frame as will be perceived, rides upon four ordinary wheels; the front ones being smaller and running under to facilitate turning. On the inner side of the hind wheels (within the felloes) are placed a series of segments forming pulleys for belts. At the hinder end of the machine is a cylindrical wheel in which are placed eight broad brushes, (made of the common birch twig,) and so secured that they can be regulated to the convexity of every surface of the street, and can also be lengthened as they wear off, with little or no trouble. The cylinder is driven by a belt from one of the hind wheels, over a 20 inch pulley. Immediately in front of the brush wheel is an inclined plane, slightly concaved, about 22 inches long and as wide as the brushes.—This plane is jointed and so hung that it regulates itself to the surface. Just in front of this plane and ascending to the top of the body is an elevator the width of the brushes, driven by a belt or cogs and pinion from the other driving wheel.

The operation of the machine is as follows: As it is drawn forward, the brushes strike the ground as they revolve, throw the dirt upon the inclined plane, up which they carry it by the same stroke, until it falls into the elevator and is by it thrown into the body. In loading out, a cart drives up beside it, the driver of the machine twitches a fastening, the door of the body forming a shute falls and the load slides out into the cart, requiring from 1½ to 2 minutes to transfer a cart load. The body will contain about three cart loads.

A drag rake with a double set of teeth, is arranged under the machine for scattering heaps of rubbish that might obstruct the operation of the brushes, and for cutting up stiff mud and hard crust, so that the brushes can take them up; this is raised or lowered by a lever in a manner similar to the brake of a wagon. A gutter cleaner, which is nothing more than a very stiff broad broom running along diagonally, works the dirt out of the gutter so that the machine can take it up, is placed on the right side near the front end and is only used as occasion requires.

There are a number of little matters of convenience about this machine too minute to describe, and among the rest a little arrangement by which the brushes, &c. can be instantly raised off the ground when not in use. To give some idea of the power of the brushes, moderate sized paving stones and halves of bricks, &c. were found among the dirt taken up by them on a recent trial. There is nothing about the machine that is liable to get out of order any more than about a common wagon. It is tended by one man, and although worked with ease by one horse, yet from the weight of dirt it will carry, two will be required, and it is calculated to clean from four to five miles of street in a day, depending of course on the width.

The Electric Telegraph in Holland.

A recent ordnance of the King of Holland, says the Liverpool Albion, enacts that no line of electric telegraph shall be established without the consent of the Government: that the tariff for the transmission of intelligence shall be submitted to the Ministers of the Interior and Finance; that intelligence from or to the Government shall be transmitted in preference to private individuals; that in time of war, the telegraphs shall be placed under the control of the navy and war departments; that, when peculiar circumstances shall require it, the service of telegraphs shall be entirely or provisionally suspended: that all the news received or sent by telegraphs shall be inscribed on registers, and that, if eventually, the use of electric telegraphs shall be found to lessen the revenues of the Post-office, that the proprietors of the telegraphs shall be obliged to pay an indemnity.

Some fine flax producing 500 lbs to the acre has been grown in Van Diemen's Land.

RAIL ROAD NEWS.

The Philadelphia and Trenton Railroad Company has declared a dividend of four per cent for the last stx months.

The Alabama Legislature has chartered a company to construct a Railroad from Tuscaloosa to Montgomery. When completed this will place Charleston in railroad communication with Tuscaloosa.

A committee in the Rhode Island Legislature have reported in favor of a petition in relation to that part of the air-line railroad to be situated in Rhode Island.

New Haven Canal Railroad.

This road, extending northerly from New Haven to Plainfield—28 miles—by the recently published report of the company is stated to have cost thus far, the sum of $60 per share on 12,000 shares, or $720,000, and that it has been leased to the New York and Boston Air Line for twenty-one years, at 45,000 dollars per annum. The road is to be extended to some point in Massachusetts—either to Springfield, Westfield, or South Hadley Falls.

South Western Railroad.

A correspondent of the Journal of Commerce says that when the proposed South Western Railroad (from Macon, Georgia, to Pensacola, Florida,) is completed, the journey from New York to New Orleans, can be made within one hundred hours.

Chicago and Galena Railroad.

Contracts for the first twenty-five miles of this road have been entered into. The whole distance is about 160 miles. It will be a very important link in the means of travel and transportation at the West, and makes a good beginning for the great proposed Oregon and California Rail Road.

Rail Roads of the United States.

We shall soon have two tier of great railroad stretching from this City through the state, viz, the New York and Erie, and the New York and Hudson line branching to the west at Albany, and meeting, as it yet will, the Great Railroad from Canada at Rochester.

In seventeen years nearly 6000 miles of railroad have been constructed in the United States at a cost of over one hundred and twenty-two millions of dollars. This is unprecedented in the history of our civil constructions. It demonstrates beyond any other fact the gigantic growth, the unceasing industry, and cumulative power of capital in this youthful and vigorous nation.

Telegraphic Extension.

In consequence of the importance of the line from St. Louis to Chicago, arising from the completion, at no distant date of the Michigan and Illinois canal, it is determined to extend the telegraph immediately to Chicago from St. Louis. A small part of the route from St. Louis to Alton is already finished and in active operation.

There are on an average three hundred messages every day between Pittsburgh and Cincinnati.

George Combe at Glasgow Athenæum Soiree.

"We have made more progress, morally, economically, and intellectually in ten years, than our forefathers in a century. It has been my fortune since I first appeared in Glasgow, to have visited many nations of the earth, and become intimately acquainted with some of the best spirits and leading men; and I am happy to say that the conviction that this world is founded, on the whole, on moral principles, and that Man has a moral destiny before him, is gaining ground wherever I have been; and that the desire of knowledge is the aim of all the countries of Europe, and also of the United States of America,"

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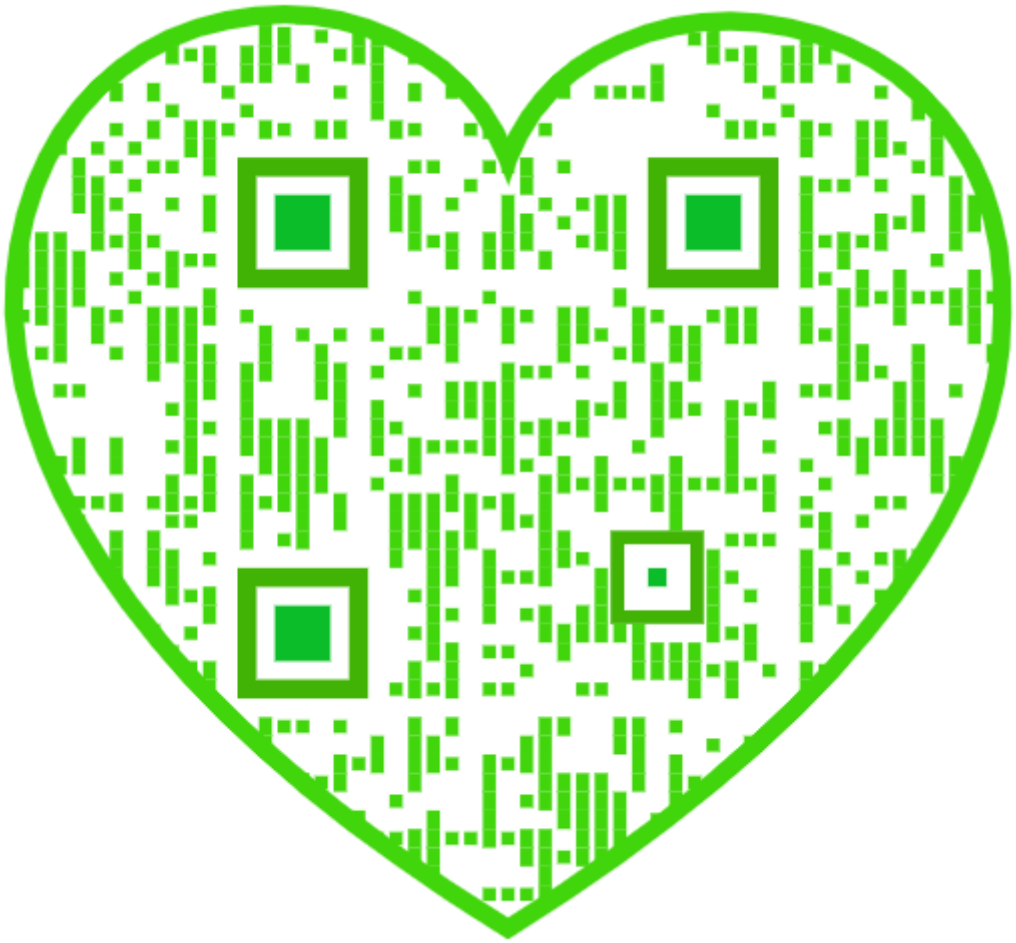

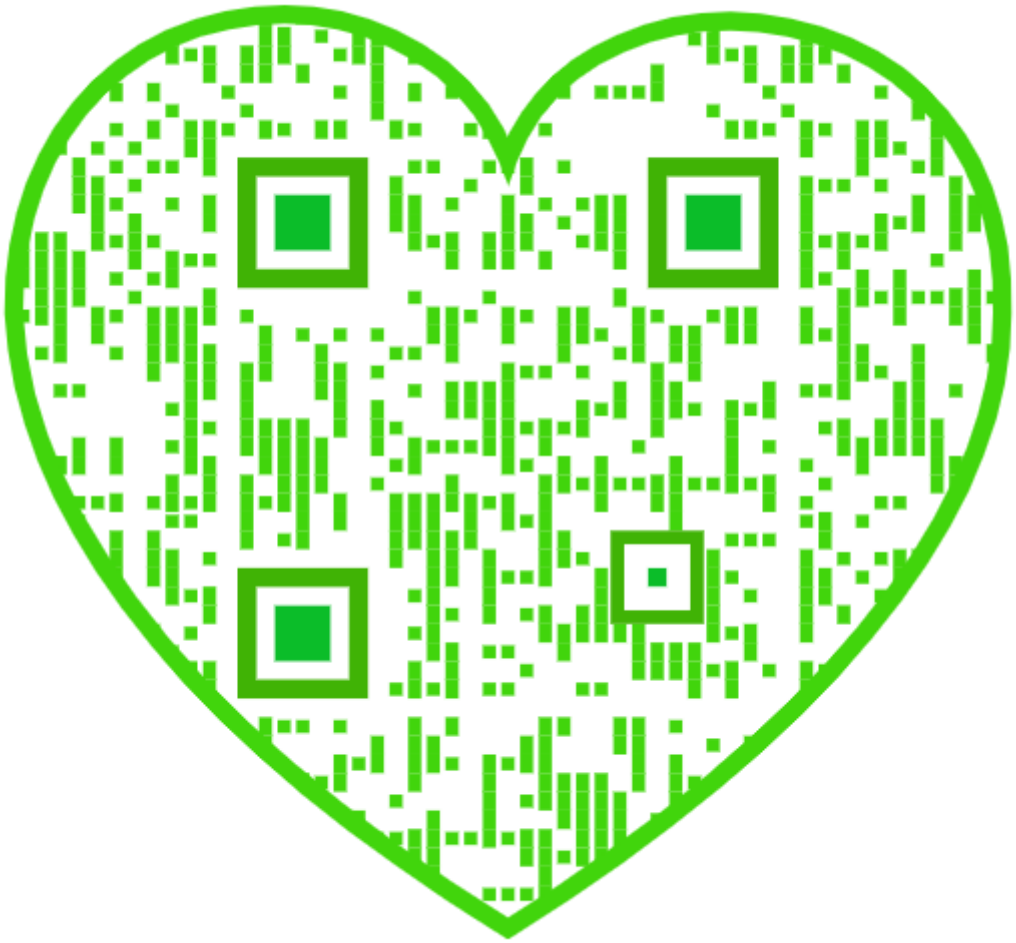

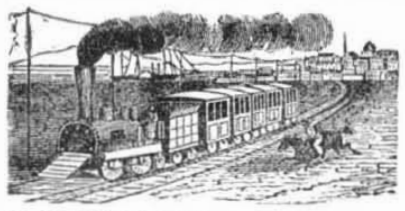

Improvement in the Telegraph.

We have conversed with Dr. Roe of Illinois, who is proceeding to Washington with a model of an invention which he calls the Telegraph Manipulator. Dispatches, messages or large documents are set up in *electrical types*, locked in a chase similar to printing types, and the form placed upon the machine. Dr. Roe is sanguine in the belief that he can by this machine transmit to all points connected with the wire, as much matter as would make one entire page of the Chronicle in *twenty minutes.*

The Manipulator is represented as remarkably simple, and not likely to get out of order. And to secure correctness, as well as speed, a proof is taken from the types in the ordinary manner. Dr. Roe has promised us a full description of his improvement after he has secured his discovery by patent.—*Cincinnati Chronicle.*

The Chronicle surely does not believe that the Doctor's machine can set up one of its pages in twenty minutes?

Whaling Business.

The Nantucket Inquirer draws a discouraging picture of the prospects of the whaling business in that place. Since the year 1843 the whaling business has been diminished fifteen sail, by shipwreck sales, &c. The voyages are said to be one third longer than they were twenty years ago, and the number of arrivals and departures is constantly growing less and less.

The consumption of whale oil has been decreasing for a long time as well as the supply. Other carbonic materials are now applied to purposes for which fish oil at one time was alone used.

Bad Gas in Philadelphia.

In a debate before the select council of Philadelphia upon the question of contracting to furnish the Southwark and Moyamensing Gas Company with gas, Mr. Wetherill stated that the amount now consumed every night is 7000 more cubic feet than the gasometer will hold. So that the works must be pushed to a great extent to supply the constant demand. We presume this fact will account in some measure for the bad quality of the gas. There is so great a demand, that it is manufactured in such haste that there is not time for simple purification. This is a great evil.

Professor Morse made Pacha.

A correspondent of the Journal of Commerce, writing from Constantinople says that "a decoration in diamonds of a Turkish Order of Honor, such as is given to Pachas of two tails, is actually in the hands of our legation, for Professor Morse, from the Sultan. in return for the view of his Telegraph. It will arrive in America with a Royal diploma at the same time.

Explosions.

A Committee appointed by the Citizens of Cincinnati to examine into the cause of the N. A. Johnston's explosion, have reported and are about memorializing Congress to pass a stringent law for the proper building equipping, manning, officering and navigating the high pressure steamboats on the South Western and Western waters.

Glasgow Athenæum.

The Athaenaum of Glasgow Scotland was opened on Christmas by a gorgeous display of talent and greatness. Dickens, Allison, Combe, Chambers, and a host of other eminent men were among the speakers. The American Consul was on the stage in full uniform, and the Union Jack was on one side of it and the Star Spangled Banner on the other side.

Lectures on the Gypsies.

Mr. Caruther, a young gentleman of this city, delivered a very interesting lecture on the Gypsies at the Minerva Rooms last Monday Evening.

New Steam Guage.

Mr. George Stephenson addressed the following letter to the London Daily News.

"Sir,—A most important invention has been submitted to me for my approval, patented by a Mr Smith of Nottingham, and is intended to indicate the strength of steam in steam engine boilers. It is particularly adapted for steamboats, and can be placed in the cabin, on deck, or any other part of the vessel where it may be seen by every passenger on board. It may also be fixed in the office of every manufactory where a steam engine is used, at a considerable distance from the boiler. I am so much pleased with it that I have put one up at one of my own collieries; it is at a distance from the boiler, and in another house, and works most beautifully, showing the rise and fall of the steam in the most delicate manner. The indicator is like the face of a clock, with a pointer making one revolution in measuring from 1 lb. to 100 lbs. upon the square inch of the pressure of steam: it is quite from under the control of the engineer or any other person, so that its indications may be relied on, and the construction is so simple that it is scarcely possible for it to get out of order. I might give a full explanation of the machine, but I think it best to leave that to the inventor himself. The numerous and appalling accidents which have occurred from the bursting of steamboat boilers, have induced me to give you these observations, which I think desirable to be laid before the public. I may state I have no pecuniary interest in the scheme; but being the first person to whom it has been shown and the first to make use of it, I feel it a duty that I owe to the inventor as well as the publie, to make it as universally known as possible. The indicator is put up at Tapton colliery, near Chesterfield, and may be seen any day, by any respectable person on inquiring either for Mr. Hindmarsh or Mr. Langlands.

GEORGE STEVENSON,
"Tapton House, Chesterfield."

Newton on Infidelity.

Halley, the great mathematician, dabbled not a little on infidelity; he was too fond of introducing this subject; and once when he descanted somewhat freely on it, in the presence of his friend Sir Isaac Newton, the latter cut him short, with this observation: I always attend to you Dr Halley. with the greatest deference, when you do us the honor to converse on astronomy or the mathematics, because these are the subjects that you have industriously investigated and which you well understand; but religion is a subject on which I always hear you with pain, because this is a subject which you have not seriously examined, and do not comprehend; because you have not studied it. and you will not study it because you despise it.

Improvement in Dentistry.

Drs. Grandin and Dudley, of Boston, have made several very important improvements in the mode of fixing a whole set of teeth to a single stump and so firm and durable that it has been represented to us as being a most important improvement in the Dental art.

Ivory.

An elephant's tooth weighing 89 lbs. and worth $139, was lately lost on the Western Railroad and found by some wight who was so ignorant of its value as to sell it for four dollars and ten cents. The purchaser cut up the tusk and sold it to different people in Worcester, Mass., at 50 cents per lb., thus making a nice bit of speculation out of it.

Exchanging Sides.

Ralph Waldo Emerson of Mass., has been delighting the people of Scotland with his lectures, and Prof. Nichol of Glasgow, Scotland, has been delighting us Yankees on this side of the water.

Luxury.

In the time of Henry VIII, we find directions to "examine every night, the straw of the King's bed, that no daggers might be concealed therein." A writer in 1587, meantions three things in England," marvellously altered for the worse; the multitude of chimneys lately erected, the increase of lodgings; and the exchange of tureen platters into pewer, and wooden spoons into silver and tin."

Holden's Dollar Magazine.

The February number of this valuable monthly is received and too much could not be said in its praise.—Each number of the the above contains 64 pages choice reading matter and is printed on beautiful fine paper issued regular at the close of each month, and what is the most peculiar feature about it is. that the publisher can afford it at such an astonishing low price —Only one dollar a year—See advertisement in another column.

Schramke's New York Croton Aqueduct.

Messrs. Wiley and Putnam, 161 Broadway, have favored us with Schramke's description of the Croton Aqueduct, illustrated with 20 beautiful plates representing the different sections of the work and published in three different languages, viz. English, German and French. It is the most splendid work on Hydraulic Architecture that is sold in this country, and we hope the publisher will get rewarded for the immense expense which the enterprise must have incurred. It was published at Berlin, by the author and is for sale as above, 161 Broadway New York.

The Green Veil.

The American women leave whittling to the other sex, but they have also their hobby —it is to wear a green veil. In summer it is a rampart that defends them from dust and the heat of the sun; in winter against the cold and at all times from curious glances. What husband, what father, would recognise his wife or daughter under this mask? Thanks be to the green veil—the best of cosmetics—it preserves that beauty of complexion for which American ladies are distinguished, and which would fade under the attacks of a cold which is very ungallant, and of a sun which respects nothing.

Sewers and Cespools.

In London a new system of sewer and cesspool cleansing has been organized, numbering a Cabinet Minister among its new and active Commissioners. Over a million of dollars will have to be expended in one district (Holborn and Finsbury,) to remedy the defects of the old plan. The progress of improvement, as to Sewers, is unparallaled in any former age. Many thousand feet of sewers have been cleansed by flushing.

This is done by force pump swith flexible hose. It is well known that in regard to suction hose attached to Fire Engines, America was far in advance of England, but they have gone there into the use of it in the right spirit, and the force pump is employed in London to effect a purpose very essential to health.

They have been actively engaged in emptying cesspools in courts and alleys by the use of the pump and flexile hose, directed to the nearest sewer. The poor inhabitants testified the greatest thankfulness for this riddance. Disinfecting fluids are used while the pump is in operation.

Chloroform.

Chloroform is composed of two atoms of carbon, one atom of hydrogen and three atoms of chlorine. It is a heavy, sweet fluid, having a sp gr. of 1.489 at 60 F. (according to some experiments,) or 1.480, as given in books. It boils at 141 F, and is very volatile having a fragrant odor. It is not combustible when flame is applied to it, nor is its mixture with the air explosive, and has a very sweet taste.

In administering it no apparatus is needed beyond a simple piece of cloth of open texture, a small conical sponge, or a linen cambric handkerchief. Take the cork from the phial of chloroform and apply the cloth to its mouth, and shake the bottle, so as to wet a spot on the handkerchief (just as people commonly scent a handkerchief with cologne water) cover the mouth and nose with it lightly, and then let the air be drawn partly through the cloth. Five or six inspirations generally suffice to produce momentary insensibility, and a few more bring on a sound, snoring sleep, in which no pain can be felt, even when the knife or cautery is applied.

House Burnt by a Cat.

A house in Juniata township Pennsylvania, was burnt recently by a cat. A burning ember fell on the back of puss, who ran to the garret and threw it among a heap of flax.

Waterproof Blacking.

We have received a new composition for making boots and shoes waterproof and answering the purpose of beautiful blacking. It is the best composition for that purpose we have ever tried, and the inventor, Mr. John Hutchinson, of Newbern, N. C., has provided for all who wear boots and shoes and wish to keep their feet dry, the one thing needful

Threaded Bank Note Paper.

We are surprised that this invention is not used for every bill now made, as it is a perfect preventive to altering bills. We have in our possession some of this beautiful paper manufactured by Crane & Co., Dalton, Mass., and we must say that the public demands its immediate and general adoption into bank notes and bills, as every day brings before the public some new and well accomplished piece of forgery and alteration.

The Peoria Register Ill., says that there is now in possession of Messrs, J. S. Thompson, and Co., of that City, a horse caught on the Rocky Mountains without mane or tail and covered with wool. It is said to be extremely swift on foot It is likely to be a doubtful speculation.

It is reported a resurrectionist was lately shot in Cincinnatti by a bullet fired by an invention attached to the coffin, which he was about to rob. He went to steal the dead and death robbed him of life. He was found dead beside the corpse.

Lieutenant Brower, (of Brooklyn, L. I.) of the New York Volunteers, the Globe says has been appointed second lieutenant in the regular army, for his gallant services at the taking of Chapultepec. It was to him that General Bravo, ex-President of Mexico, surrendered his sword.

It is said that hens will lay as well in the winter as in summer if they get half an ounce of sausage meat once a day. The hens must be kept by themselves. We have our doubts about this plan.

Lately in the hospital at Trieste, Luca Brisaic died, at the age of 116 years, 96 of which he was a soldier in the Austrian army. He had been an inveterate smoker of tobacco from his fourteenth year, and died with a pipe in his mouth.

The number of beet-root sugar manufactories in France on the 1st. instant was 303, or ten more than at the corresponding period of 1846.

The quantity of water which entered the Wigan coal mines lately, by the irruption of the River Douglas, Scotland, is calculated at 3,495,375 tons.

A Mr. Whalen of Skeneateles, N. Y., is reported to have chopped and corded seven and a half cords of beech and maple wood, four feet stuff, in twelve hours. "It looks to be an extravagant statement."

A Telegraphic message sent from New York to St. Louis, at twelve o'clock noon, will reach its destination on the banks of the Mississippi at ten minutes before twelve o'clock.

The working men of Birmingham England presented to a Hospital in that City lately, the sum of $4,398. All this was raised by penny subscriptions.

The Key to Don Quizotte, written by Cernantes himself, has been found in MSS. in Madrid Spain and has created quite an excitement.

The fine Steamboat Seventy-six was burnt on the 10th of January in the Mississippi, a short distance from New Orleans.

The citizens of Reading, Pa., are about to erect a monument to the memory of William Penn.

Queen Victoria reigns over an empire of 2,814,040 miles in extent containing a population of 129 829,500.

It has been reported and contradicted, that the Lowell Factories had reduced the operatives wages.

Coffins made of iron galvanized coated with varnish and hermetically sealed are now made in this city.

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For the Scientific American.

Animal Mechanism.

At the knee where the motion is backwards and forwards in the same plane, there is a hinge, mortice and tenon joint, more accurately defined by the Great Architect than any that comes out of the hands of the most ingenious carpenter. At the hip there is a mortice and tenon joint of a peculiar form. There is a socket and a ball so that not only for walking is it most beautifully and skilfully adapted, but the limbs can be extended in a different direction with the greatest facility. Mountebanks have skilfully availed themselves of the adaptedness of this joint to this purpose, and have made whole theatres to stare at their wonderful agility and suppleness, whereby they have thrown their limbs on a horizontal line with the plane of their bodies.

In machinery we use oil and other lubricating material and construct anti-friction wheels to make shafts and other pieces of mechanism run with ease and smoothness, but the Great Mechanic has furnished our bodies with a supply of the most refined lubricating material for our joints and applied it by a most masterly contrivance. To our joints there is supplied regularly a mucillage more slippery than oil which wonderfully diminishes the effect of attrition. For this purpose glands are fixed near each joint for feeding the cavities with this distilled mucillage, and the glands hanging like loose fringes within the cavities the oil is continually oozing out from them to lessen the friction. Friction wheels in machinery are made in imitation of this but the animal manifests a decided superiority over the merely artificially mechanical. The fine polish on the surface of the bones which compose our joints cannot be equalled by the most skilful artist, and the lubricating material which is continually dropped into them is supplied in proportion to the amount required as the ducts give out the mucillage as they pressed, more or less, by the action of the joints. It would be well for every mechanic to study Anatomy, at least the great outlines of the science. From a study of the arrangement of the *different parts of* the animal economy, many surgeons have become the most skilful and ingenious mechanics. Dr. Anderson, the inventor of the *Flying Artillery*, was one of the most ingenious of mechanics, and there is not a single surgeon but is very skilful, in fact has to be, and neat in constructing and arranging various machines.

PHYSICIAN.

Trituration Phenomena.

If any coarse and dry substance is triturated by itself, it will continue to be permanently divided and subdivided to a certain but limited extent—for beyond that, the blow would either leave the parts so near each other that they would instantly reunite by the power of the cohesive forces and again become *one solid body*, or would drive these newly separated parts against others or each other, and effect their union by bringing them within the sphere of cohesion. This principle is illustrated by the example of the flint stone,—if pulverized in a mortar, it would at length become so fine that some of the finest of these invisible flint stones would, after any farther division, be soon reunited. All that would be necessary for their reunion and the restoration of their previous hardness would be to bring the parts or their mutually attractive poles so near as to touch each other as before their separation, for the strength of their cohesion depends on the degree of their proximity.—The approximation and union of some of these smaller than microscopic pebbles would be promoted by the pressure of the pestle ; the same blows that severed some would unite others—so that the average size of the parts would remain unchanged.—*Dr. Joslin.*

[It is a well known fact, which we have experienced frequently, that after having pounded some hard substance in a mortar until it was so fine that no grit could be felt when pressed between the fingers, that a heavy blow with the pestle would make this *fine substance* become perfectly hard, just as Dr. Joslin has represented. Indigo for example, is a good substance to test the truth of this statement.

Insects are found in slate and flies in amber.

Velocity.

The velocity of motion is estimated by the time employed in moving over a certain space or by the space moved over in a certain time. The less the time and the greater the space passed over in that time, the greater is the velocity. Thus the space and time being given, to find the velocity divide the space by the time. The time and velocity being given, to find the space multiply the velocity by the time.

The uniform velocity of sound compared with the instantaneous motion of light enables us to determine the distance of the object from which the sound proceeds ; as that of a cannon fired at a distance, or a thunder cloud, provided we can see the flash and hear the report. Multiply 1130 by the number of seconds between the flash and report—the product will be the distance in feet. Divide the number of seconds by 4·5, and the quotient will be the miles, nearly.

Sound conveyed by means of water, mercury or spirits of wine, moves 4900 feet in a second ; conveyed by tin, 7800 ; by silver, 9300 ; by brass, 11,800 ; by copper, 12,000 ; by iron or glass, 17,500, and by wood, from 11,000 to 12,000 feet in a second. According to the experiments of Sauveur, the lowest sound which the ear can appreciate consists of 12½ undulations in a second, and the most acute of something more than 6000.

Color of Snow.

It has been found that the colors of bodies depend very much, if not entirely upon the arrangement of their particles by whtch they reflect this or that kind of rays of light. Some experiments of Dr. Brewster of Edinburgh, prove this. He took a piece of polished steel and by beating it to a different degree of temperature, different colors are exhibited and by making slight cuts on its surface, some of them curved or waved &c., he also was enabled to exhibit different colors in consequence of the light being reflected at different angles and of course different rays striking the eye. In regard to the color of snow, we believe that in our latitude it is of a brilliant white color. But in higher latitudes it has been seen of a red color. This at first astonished Parry and his companions, who discovered it in the arctic regions. After a close examination it wns found that the red color was occasioned by a foreign substance mingled with it, and which, on further examination, was found to be a very minute vegetable, something like some of the mosses or mould. Indeed, it might with propriety be said to be mouldy snow.

Capt. Parry observes that the arctic mountains, on which he observed the red snow, are about six hundred feet high, and extended eight miles in length. The depth to which the color penetrated has been variously stated by different observers. Some found that it descended many feet beneath the surface, while others never ascertained that it spread beyond one or two inches.

There is no reason to suppose says he, that the coloring matter itself as well as the snow, is a meteorlogical product, althongh Humboldt certainly mentions a shower of red hail which fell at Paramo, in South America.

A Beautiful Moral.

A boy, on perceiving a butterfly, was so smitten with its gaudy colors, that he pursued it from flower to flower with indefatigable zeal ; at first he attempted to surprise it among the leaves of a rose ; then he endeavored to cover it with his hat, as it was feeding on a daisy ; now he hoped to secure it as it revelled on a sprig of myrtle ; and now grew sure of his prize on perceiving it to loiter on a bed of violets ; but the fickle butterfly still eluded his attempts. At last, observing it half buried in the cup of a tulip rushed forward, and snatching at the object of his pursuit with violence, it was crushed to pieces. The dying insect perceiving the boy chagrined at his disappointment, addressed him with the utmost calmness in the following words:

"Behold now the end of thy unprofitable solicitude, and learn for the benefit of thy future life, that pleasure like a painted butterfly, may serve to amuse thee in the pursuit but if embraced with too much ardor, will perish in thy grasp."

Divisibility.

Divisibility renders a body capable of being divided, either by actual separation of its particles, or by some imaginary dividing time Dr. Keill has computed the magnitude of a particle of assafœtida, to be only 38 trillionths of a cubic inch. For the purpose of forming its web, the spider has a most curious spinning machine. It consists of four little knobs or spinners, enclosed by a ring and pierced with a multitude of holes, so numerous and so extremely fine, that there are above a thousand in each of these four divisions, a space itself not bigger than the point of a pin. From every one of the holes a thread proceeds so that the very finest part of a web which we can see is not a single line, but a cord, composed of four thousand strands as a rope-maker would call them.

Wool may be spun so fine that a quantity weighing only one grain may be divided into eighty thousand parts each visible to the naked eye. Certain microscopic animals have been discovered in various substances so minute that many thousands taken together, are less than the point of a needle. A grain of musk will fill a large room with a very strong scent, without losing a millionth part of its weight. Whence it is calculated that a single grain is actually divisible into more than six trillionths of parts. A grain of gold can be beaten so thin and spread so large as to admit of being divided into fifty millions of parts, each of which may be distinctly seen with the help of a microscope.

Excavations in Pompeii.

The political state of Italy has lately been engrossing so much attention, that little time has been found for its antiquarian Since the discovery of the 47 gold coins, and 250 silver coins, together with gemmed ear-rings a dwelling house has been excavated near della Fortuna, which surpasses in richness and elegance all that has before been discovered. The open vestibule, is paved with mosaics, and the walls decorated with tasteful paintings. The Atrium opens into the tablinum and the reception room. and the latter leads into the dining room, which is painted with mythological subjects the size of life; Here were several triclinic couches, not unlike our modern sofas, richly ornamented with silver. The reception room looks into a garden with a beautiful fountain, adorned with numerous mosaics, and a small statue of Silenus ; the basin is surrounded with the most exqusite sculptures in marble. Adjoining the dwelling is another four wheeled carriage, with iron wheels and many bronze ornaments, In the kitchen also are ornaments and utensils of bronze, and the traces of smoke are visible in many places, after the lapse of 18 centuries. The apartments of the dwelling house contained numerous elegant utensils of gold and silver, vases, candelabra, bronze coins, several cases of surgical instruments, &c. What is extremely rare is, that there is a second and even a third story, which are ascended by a wide flight of stairs. On a small painting near the staircase is the name and rank of the owner, in scarcely legible characters! and from which it appears that he was one of the Decurii, or Senators of Pompeii. All the walls and the rooms are ornamented with comic and tragic paintings, one of which represents a young girl with a matk and a flagolet. Hence the house has received the name of *casa della Sonatrice*, or *casa del 'Ercole ubbrucio.*

Extraordinary.

Recently, the men employed in opening a new colliery at Northup, near Hawarden, Flintshire, Eng , brought up a piece of solid coal. It happened to get broken when a shell was discovered inside containing a live catterpillar. We understand that this extraordinary reptile remained alive for two days after it was rescued from the prison in which it had been confined from the time when the coal was overwhelmed and buried in the bowels of the earth. The shell and the remains of the catterpillar have been sent to the museum of the King's College, London. There have been numerous instances of frogs and toads beig buried alive in the midst of solid rocks, but this is the only instance that we remember of a catterpillar having been found alive in such a tomb.

The Power of Imagination.

Physiopathy is a faculty of pervading all nature with one's being so as to have a perception, a life, and an agency in all things. A person of such a mind stands and gazes at a tree for instance, till the object becomes all wonderful, and is transfigured into something visionary and ideal. He is amazed what a tree is, how it could, from a little stem, which a worm might crop. rise up into a majestic size, and how it could ramify into such multitudinous extent of boughs, twigs, and leaves. Fancy climbs up from its root like ivy, and twines round and round it, and extends to its remotest roots shoots and trembling foliage. But this is not all ; the tree soon becomes to your imagination a conscious being, and looks at you, and communes with you ; ideas cluster on each branch, meanings emanate from every twig. Its tallness and size look conscious majesty, roaring in the wind, its movements express tremendous emotion, In sunshine or soft showers, it carries a gay, a tender or a pensive character ; it frowns in winter in a gloomy day. If you observe a man of this order ; though his body be a small thing, invested completely with a little cloth, he expands his being in a grand circle around him. He feels as if he grew in the grass, and flowers, and groves ; as if he stood on yonder distant mountain top, conversing with the clouds, or sublimely sporting among their imagined precipices, caverns and ruins. He flows in that river, chafes in its cascade, smiles in its aqueous flowers, frisks with the fishes. He is sympathetic with every bird. and seems to feel the sentiment that prompts the song of each. This is, in one sense 'inheriting all good things.'

Temperature of the Ocean.

According to Captain Ross's experiments, the zone of mean temperature lies between the parallels of 54 degrees, and 60 degrees of south latitude, not only at the surface, but to as great a depth as the ocean has ever been penetrated, Future trials will in all probability reduce it to narrower limits; its position in the northern hemisphere remains yet to be ascertained. This mean temperature is met with both in the polar circles and in proceeding towards the Equator. In the higher latitudes above 10 degrees, the ocean in descending increases in temperature until it arrives at its mean point; while proceeding towards the Equator it decreases from the surface downward—this decrease, beyond the tropical circle, is about twenty-three fathoms for every degree of latitude, within the tropics it is 1 degree for every thirteen fathoms of depth, until 400 fathoms, after which it requires a descent of from 200 to 400 fathoms to effect a like change.

From the observations of Admiral D'Urville it would appear that the waters of the Mediterranean do not follow the rate of descent of the Atlantic and Pacific Oceans. He estimated the mean temperature of that sea below 200 fathoms, at 65 degrees, and this from the fact of having obtained that temperature at the depth of 1,000 fathoms. If this be so, it leads to an interesting inquiry whether this may not be in consequence of the vast internal fires that are known to prevail in the countries that surround it.

Economy.

At the recent Railroad celebration in New Hampshire, a large number who remained in Lebanon, were sadly puzzled to find accomodations over night. A worthy inhabitatant of that place, declares that such was the rush, that, in one instance, there was but one bed for fifty persons! In this dilemma, the following expedient was adopted:—'Two persons took possession of the bed, and being much fatigued, were soon sound asleep, they were then carefully removed, and set up against the wall. This process was repeated till the whole fifty were disposed of."

A Deep Crime.

If there is one crime more deep than another, it lies at the door of him who corrupts the morals of another perhaps a young and confiding friend. He is sowing, broad-cast seeds that may devour the constitution, and destroy the happiness of millions yet unborn, The doom of such cannot fall short of the "blackness of darkness" forever and ever.

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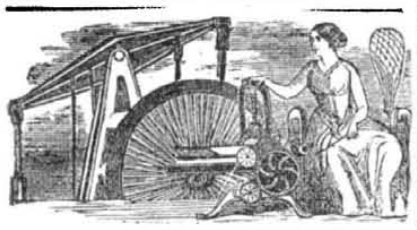


New Inventions.

New Self-acting Brake and Safety wheels.

Mr. C. H. Smith of Niagara Falls, has invented an entirely new, simple and apparent effectual plan to recover cars that may have run off the rails The plan is a simple modification of the wheels, with a self acting brake attached to the trucks and which can be applied to single wheels and locomotives. Upon each wheel there is an extra flange on the inside and extra bearings on each side of the ordinary faces of the wheel with its small flange in common use—the centre being the main running face, making the whole face of the wheel about thirteen inches—the two extra bearings being a little less in diameter than the centre face or bearing. If the wheels are thrown off their common bearings the extra flange comes into play and retains the wheel on the track, and this is done by an ingeniously constructed brake which comes into operation the moment that the trucks commence bearing on the safety flanges and stops the cars, when they can be easily thrown back upon the running surface.

The plan for the full accomplishment of this we do not yet fully understand, but at some future time we will perhaps be able to be more minute and particular, and as we expect to have a model before us, in the course of a few months. The inventor has just taken measures to secure a patent. A number of scientific gentlemen and practical mechanics have examined the invention and expressed very favorable opinions respecting its importance and advantages. All rail road companies should examine this invention and apply it to new cars. Mr. Smith's self-acting brake can be applied for common purposes by the usual hand wheel. Although the new wheels of this invention may be 60 or 70 lbs., heavier than those in common use, it is estimated that for safety and wear and tear they will be by far the most cheap in the end, although a little more expensive for the primary cost of new cars.

Self-actin Chair.

We have examined a chair invented aud constructed by Mr. Smith, cabinet maker, No. 146 Cherry st., this city. It is one of the best chairs for invalids that we haue ever had the pleasure of seeing, It answers the purpose of sofa, chair and bedstead. The back is attached to the seat rail by hinges and the seat slides forward or backward in a rack, bringing the back to any angle desired or parallel with the seat by a most simple arrangement of a small catch spring to hold the seat of the chair at any desired point, and also to allow the seat and back to slide by a very light pressure to relieve the spring from binding on the seat rail. The stuffing of the back is very different from those in common use The frame of the back is not curved much, but the spring cushion bulges out so as to allow the back to recline in the most easy manner. We believe these chairs can be furnished for about the same price as common easy chairs, and they certainly are a great improvement.

Foster and Bailey's Rock Driller.

The importance of this machine, a description of which we published in our last, has been so highly estimated that respectable gentlemen have taken immediate measures to secure a patent in Europe. Information respecting it can be had by communicating with Mr. John T. Foster, No. 42 Gold street, this city.

New Arch Bridge.

We have been informed that Mr. John Boynton of South Coventry, Conn., has made application for a patent for a new improvement in bridge building, whereby a bridge of great strength can be made over a stream of 1000 feet wide without a single pier between.

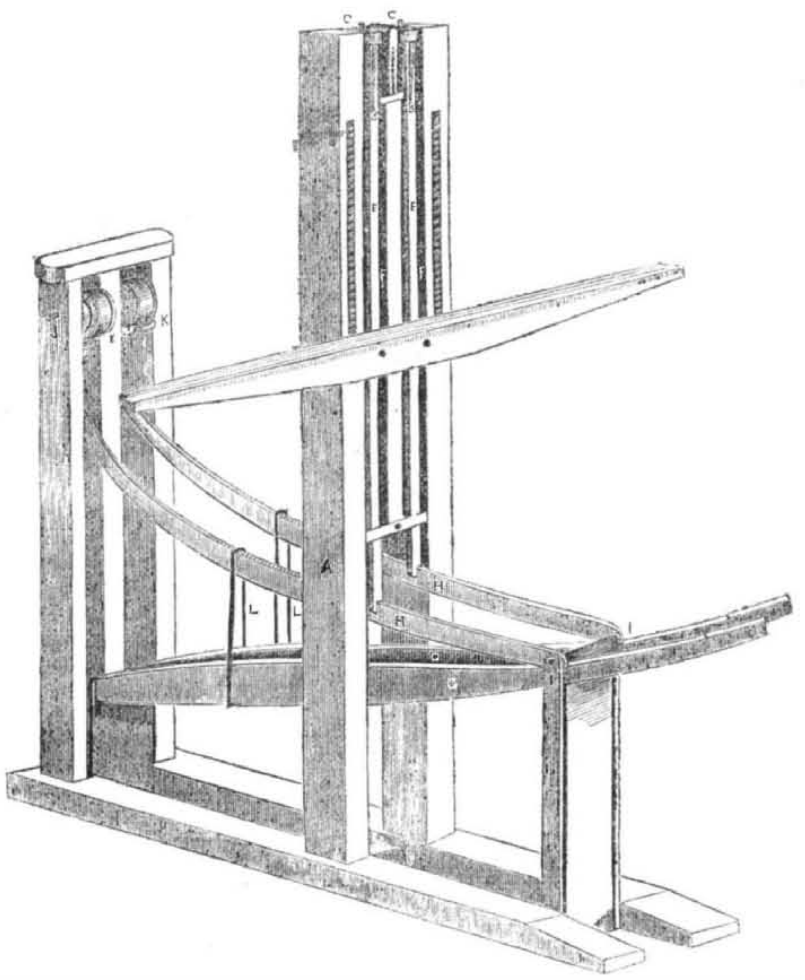
Silken Sails for Ships.

A new discovery of great interest to the navy has just been made known in France by a gentleman known as the Pere Chatelu, but who is in reality the Marquis de Chasteaux, one of the most ancient titles in France. His father having died in emigration and leaving him no resource, the marquis deemed it in better taste to drop the title for a while, until he had acquired fortune enough to support it with honor. The discovery consists in the employment of the cocoons and refuse of silk for the manufacture of sails, and cordage. The material is lighter, cheaper, stronger and more elastic than hemp. The invention is adopted by the Minister of Marine.

A kind of coarse silk called pongee is perhaps the most durable fabric that is made into articles of wearing apparel, and our readers will easily perceive that the Marquis's fabric is of the same nature, and no doubt must remain of its utility for the purpose set forth above.

A French inventor has succeeded in discovering a method of gilding silks without injuring the material, and a most dazzling appearance is said to be produced by the gilding, especially upon satin.

IMPROVED MORTICING MACHINE.



This is an important improvement on the Morticing Machine, whereby the leverage of the treadle is more perfectly adjusted to the kind of work to be morticed than by any other machine of the same kind. It is the invention of Mr. Job F. Howland, of Springfield, Mass., who has made application for a patent.

EXPLANATION.—A is a frame which can be varied at pleasure. B B, are chisels, the machine being made double, one chisel for each part, that one half of the mortice may be cut in one direction and the other half in the other direction. These chisels are secured to head pieces C C, by nuts and screws which pass through slots on the top of bars E E, that slide vertically between ways F F, in guides to secure an easy and accurate motion. The lower ends of the bars are jointed by levers H H, that turn on a fulcrum pin in yielding standards I I, that spring to the motion of the bar. The far ends of the lever are provided with straps which pass around and are attached to rotary hollow drums K K, which turn on an arbor J. Within these drums are barrel springs the outer ends of which are attached to the periphery of the drums and the straps by small pins and the inner ends to the arbor, so that the tension of these springs tend always to draw up the lever ends with them to the chisel bars. The tension of the springs can be increased or diminished by turning the arbor with a handle as there are ratchet wheels on the drums which are held fast at any desired point by palls or catches. Below the levers are two treadles G G, hung on a fulcrum pin at the back of the frame and these treadles are connected with the levers by bridle links L L, which fit in notches on the upper edges of the levers and the lower edges of the treadles, so that they can be shifted along the levers and treadles to increase or decrease the leverage of the treadles to suit the kind of work to be done.

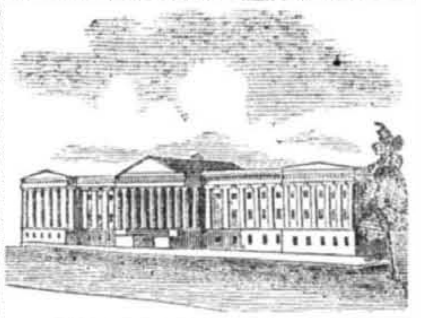
It will be observed that as the leverage of the treadles are varied, the force of the tension of the lifting springs will vary also, and therefore as the leverage of the treadles is varied so must the tension of the springs be varied, by winding or unwinding them. In this way the two can be adapted to one another and to the operator and the whole to the kind of work to be morticed, with the utmost regularity and precision, a result which experience has shown to be very important in this class of machines.

Thermometer Churn.

A Mr. Crowell, of Boston, (we believe) has constructed a churn with a false bottom of two sheets of zinc, into which warm water is to be kept in cold weather, or cold water in warm weather for the purpose of keeping the cream or milk to be churned at 62 degrees of temperature. A thermometer is attached to the churn in such a manner as to intimate exactly the heat of the contents in both chambers. The warm water can be drawn off, or more added by common arrangements. The idea of regulating the temperature is a good one. It is sometimes necessary, however, to raise the temperature to 80 degrees, and then cool for gathering the butter. Of this we are satisfied from seeing a number of experiments performed under variable circumstances.

Patent Force and Suction Pump.

This is the name of a pump invented recently by Messrs. Barlow and Fuller, of Marietta, Ohio, and sold by Holder & Co of that place, which has been employed by a number of citizens of there to pump the water from their cellars which were filled by the late freshet. The inhabitants of that place speak in high terms of praise regarding its merits. It can be used for a fire engine as well as for a common pump and thut answer a double purpose.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Feb 1, 1848.

To O. F. Winchester, of Baltimore, Md., for improvement in making Shirts. Patented Feb. 1, 1848.

To John S. Lafitte, of Baltimore, Md., for improvement in Spark Arresters. Patented Feb. 1, 1848.

To Robert Dillon, of New York City, for improvement in connecting pumps with hydraulic press or rams. Patented Feb. 1, 1848.

To William V. Many, of Albany, N. Y., for improvement in Car Wheels. Patented Feb. 1, 1848.

To J. I. Vedder and Henry Vine, of Schenectady, N. Y., for improvement in raising and tilting buckets. Patented Feb. 1, 1848.

To Samuel Adams, of New York City, for for improvement in Axles for Carriages Patented Feb. 1 1848

To David D. Hanson, of Weare, N. H., for improvement in Molasses Faucets. Patented Feb. 1, 1848.

To Erastus Stebbins, of Cabotville, Mass., for improvement in Molasses Faucets. Patented Feb. 1, 1848.

To Daniel S. Billings, of Conneaut, Penn., for improvement in Wheel Cultivators. Patented Feb. 1, 1848.

To Joseph Dudley, of Fall River, Mass., for improvement in Molasses Faucets. Patented Feb. 1, 1848.

To William Ball, of Cabotville, Mass., for improvement in Faucets. Patented Feb 1, 1848.

To Joseph Whitworth, of Manchester, England, for improvement in machinery for Knitting. Patented Feb. 1, 1848. Date of English patent July 1, 1847.

INVENTOR'S CLAIMS.

Machinery for Making Hinges.

By George H. Horton, and Leander Armstrong, of Hartford, Conn. Improvement in Machinery for manufacturing Hinges. Patented 11th September, 1847. Claim—We wish it distinctly understood that we do not intend to confine our invention to the precise forms and arrangements of mechanism as above detailed; but we mean to vary the same to any desirable extent, while we do not change the combinations or principles we consider new and as our improvements. We do not claim the invention of the die in combination with one impelling slide and chamber to receive the half of the hinge, as we are aware that such has been used before for the purpose of making a half hinge, for bending into a proper shape for a joint, but that which we do claim as our invention is the combination of the die, two impelling slides and chambers, and the turning die *f*, the whole being arranged and made to operate together substantially as above described. We also claim the wire-feeding apparatus in its combination with the dies, or machinery for making the hinge joint, and as arranged and operating therewith substantially as herein before explained. We also claim the slide or hinge discharging apparatus for making the joint of the hinge and operating therewith as specified. And in combination with the said dies, or apparatus for bending the parts of the joint of the hinge we claim the slides (by which lateral extension of the metal is prevented) the same being made to operate therewith substantially as specified. We also claim the combination of the cutting-slide (or part which severs the wire) with the bending apparatus, the same being actuated and arranged as described.

Twenty-six acres of Tobacco were successfully cultivated last year by a farmer near Springfield, Mass.

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NEW YORK, FEBRUARY 12, 1848.

Inventions.

We have a number of accounts in manuscript of recent important inventions, which some of our readers no doubt are anxious to hear from. We trust that next week will bring forward this delayed matter, a delay which we could not control.

Steam Boiler Explosions.

The subject of "steam boiler explosions" is one in which the whole travelling community feel a deep interest. It is one that has long excited much public attention, and never has it engaged more than at the present moment The late unhappy accidents in our own country has drawn the attention of Congress to the subject, and in England the Government has lately commissioned Captain Denham, R. N. to make inquiry into steam vessel accidents and he has daily been pursuing his investigations for some time. It seems that although explosions of steam boilers has been the subject of much scientific investigation, and although men of the most profound understanding and diligent habits have made it the subject of their research, yet there are still clouds and darkness hovering o'er it—there is still a variety of conflicting opinions. Steam boilers still explode after all the experiments of Perkins and in spite of safety valves and mercury gauges. The fearful explosion of the Cricket, on the Thames, last summer, a steamboat fitted with Joice's oscillating engines, and the more distressing explosions of the A. N. Johnson and the Blue Ridge, mentioned in our last number, are sad evidences that the same elements which destroyed the life of the celebrated Monk of Vaucleuse, are as actively destructive of human life in our present days of boasted advancement in science, as they were in the days of old, It cannot be expected that in a newspaper article we could enter deeply and minutely into the detail of opinions that have been advanced on different sides of this important question.—Like the pulpit, the press calls the attention of our people to the weighty matters that concern their moral, political or scientific interest, and we, therefore, briefly would point attention to those sources where deep and profound information can be acquired upon a single subject.

A pamphlet was published last summer on "the causes of steam boiler explosions, with an easy and effective means of preventing their destructive effects." We called attention to it at the time, and intended to do so again, and no more appropriate time could have happened for this purpose than the present. The basis of Mr. Wilder's theory is, "that caloric is an imponderable fluid of an unlimited velocity," and that by imposing a barrier to the flight of this fluid in a certain direction, such as fitting a loaded musket with a cork in its muzzle, is a sure method to burst the musket and cannot be imputed to the mere "*expansive* force of the liberated gas of the powder." This is sound reasoning.—From a number of examples and a chain of argument Mr. Wilder says, "it has been proved that explosions in steam engines are the consequence of the escape of elementary caloric from its combination with the vapor of water and result directly from the removal in the valve chambers of engines of the compressive force which kept up the combination."—This is fairly asserting that steam and caloric are combined and kept together by a certain compressive force, but whenever that force is removed so as to allow the caloric suddenly to take one direction, there is a separation of the caloric from the steam and that caloric so separated from steam is an *imponderable* fluid of incalculable velocity which will shatter to pieces every thing that offers resistance to its progress in a certain direction, and "this occasional violence is shown by the prodigious strength of beams, cranks, &c. which are sometimes broken." The remedy Mr. Wilder proposes, is to have valve seats which let the steam "directly into the ends of the cylinders with the least interval between them and the piston when at the end." This plan he believes would remove all resistance to the velocity of the caloric in a direct line and would be a perfect security with the common safety valve when the engine is at work, as "at no other time are explosions known to take place."

We agree with Mr. Wilder in a number of his views, only we believe that for all that has been advanced, explosions will be very rare indeed if there are careful engineers and plenty of water in the boilers. The explosion of the A. N. Johnson, however, is proof positive of Mr. Wilder's theory, for it is reported that the dying engineer declared that there was plenty of water in the boilers, and it is well known that the engine had been standing for twenty minutes before, and at the third revolution of the wheels the explosion took place. Another account, in the Cincinnati Commercial, says that a negro girl heard the second engineer say to the first "that the boilers were not safe." This is but doubtful testimony. We differ from Mr. Wilder in our opinion regarding what *his* caloric is. We believe it to be electricity It is well known that there is an abundance of electricity in almost every substance in nature and that it is perfectly at repose where the positive and negative kinds are combined, but when disturbed its extraordinary activity and subtility are incalculable. There is plenty of electricity in water and it is given off abundantly in steam. Now it is well known that water is composed of two gases, oxygen and hydrogen, in parts, by weight—Oxygen 88.9

Hydrogen 11.1

100.0

Now if these two gases are mixed together in these quantities and a spark of electricity passed through them an explosion takes place and water is the result. Or if a flame is communicated to them the effect is the same. It is well known also that oxygen and hydrogen have positive and negative qualities. If water is decomposed by a galvanic battery, the oxygen escapes at the negative wire and hydrogen at the positive pole. If water, therefore, contains electricity in an inert state, and if by heat the original elements of water are separated, is it not reasonable to suppose that in a steam boiler, where these elements may be separated, that the action of the valve according to part of Mr. Wilder's theory, may be the mechanical means of passing the electricity again through the elementary gases, and thus cause an explosion. This argument is somewhat abstract but it will be understood. If it can be proven that heat will decompose water into its constituent gases, some strength will be given to our argument.

At the meeting of the British Association of Science in 1846, Professor Grove submitted some very interesting statistics, the result of many experiments, to prove that heat would decompose water. Dr. Playfair and others objected to the conclusions of Prof. Grove, because his experiments were made with platina and they asserted that "if his experiments had been made with pure quartz," (a substance which will not mix with water) they would have been free from objections.

Since that period we have seen a letter of Mr. James Johnston, C. E., of Scotland, addressed to the Engineers' Magazine, wherein he states, "that he has tried experiments with pure red hot quartz, and the result has been the same as with platina." He also says "I have also made some experiments to ascertain if the common opinion is correct, that red hot iron when brought into contact with water, decomposes it by absorbing the oxygen and setting the hydrogen free." "That is the the theory of those who assert that explosive mixtures of gases cannot be formed in boilers; they suppose that in order to decompose water the hot iron must take up the oxygen and consequently explosive gases cannot be formed for want of oxygen. This theory I find to be erroneous."

"On thrusting a piece of red hot malleable iron into distilled water, a great many bubbles of gas ascend and this gas I find contains oxygen, for it is an explosive mixture, as immediately after collecting it, I have passed an electric spark through it and a violent explosion ensued."

This is very important scientific information and although the experiments would be dangerous to make, it would be valuable to ascertain what is the lowest temperature at which water is converted into its constituent gases by heat while it is under pressure in boilers.

From these facts it will be seen that Mr. Wilder, Professor Grove and Mr. Johnston all agree that it is a subtile fluid which is the cause of explosions, the only difference being in regard to what it is, and the precise way in which it distinctly operates. If the valve seats of engines were constructed in the ends of the cylinders, and a small valve on the steam boiler were opened always when the engine is about to be set in operation to let the electricity escape, and with a good water indicator, who would dispute the assertion, that explosions of steam boilers would soon be unknown.

We are well aware that the most correct and perfect explosive preventives will be of no avail under the management of ignorant, careless and reckless men. A fearful explosion once took place in a coal mine, where Sir Humphrey Davy's safety lamp was used, and it was at once considered that it was all a piece of nonsense to suppose that it could prevent fire damp explosions. It at last came out by one miner who was saved, in giving his evidence on the subject, in answer to a question asked him by the Coroner, said "Weel. jest as I was a lighting my pipe at the lamp, I'll be soused if I know'd any thing more till I opened my eyes in the 'osp ital."

On another page will be found an account of a new Steam Guage, invented in England and recommended by Stephenson, the great engineer. We are confident that we have steam guages in our own country to answer every possible purpose perfectly, but like the miner with the lamp, all these things would be nullified in the charge, not the care of reckless men.

Interesting to Agriculturists.

Mr. Editor :—Perceiving your paper open to all valuable communications, I venture to send you the following, hoping it may prove interesting to our farmers. It is on the use of muriate of lime, (chloride calcium,) as a manure. Being on the outskirts of the city and having several acres of land laid out for my own use, I have an opportunity of trying different substances as manures. Owing to its great affinity for water, which it attracts from the atmosphere, it renders a valuable addition to dry, sandy soil, always keeping the ground gently moistened and porous, which is of advantage to good crops. I am fully satisfied it will supersede guano, poudrette, the salts of ammonia, nitre, &c. It was at the suggestion of a friend, Mr. T. Breakell, a manufacturing chemist, that I was led to try it, hoping it will prove valuable to our farmers.

In the course of a week or so I will send a list of experiments on the increase of produce and the manner of using it.

Yours, respectfully, H. Barker.

New York, Jan 31, 1848.

Mr. Breakell says he can furnish the chloride for $30 per ton; 80 lbs. is sufficient for an acre.

A French Discovery.

Fires in chimnies, in France, have recently been prevented, by placing three frames of wire work, one foot above each other, near the base of the chimney; no flame will pass them.

[We have seen the above in a number of exchanges and have been surprised to perceive the great ignorance respecting Sir Humphrey Davy's discovery. This great chemist discovered long ago that flame would not pass through wire gauze. The Safety lamp is constructed on this principle. It is simply a lamp covered with wire gauze of twenty eight tubes or meshes to the square inch and which can be used by the miner with perfect safety in an atmosphere composed of a substance as explosive as gunpowder, when touched with a flame. Thus the French discovery mentioned above is about half a century old.—Ed.

Napier's Foundry—Cunard Steamers.

The machinery of these vessels is all prepared and fitted up by Robert Napier, Engineer, Glasgow, Scotland. His foundry is in Washington street, named by the inhabitants of that city after the admired Father of our country. Mr. Napier employs about 1500 hands in his foundries, and makes it a rule to keep none but steady sober men in his employ. He has long stood at the head of British engineers, at least for steamboat machinery, and the most perfect machinery in the world for this kind of work has been invented by himself and fitted up under his instructions. The new Cunard line of steam ships to ply between Liverpool and New York, from accounts which we have received from time to time, will be something to excite wonder and admiration. The pistons of the cylinders are of brass. each weighing about four tons, ninety inches in diameter and of proportionate thickness. The cylinders are ninety inches in the diameter of bore and near ten feet in length and turned on Mr. Napier's lathes as easy as if they were flutes, and with the utmost mechanical precision. Mr. Napier is at present fitting up a frigate for the British Government with peculiar machinery.—The frigate is called the Dauntless and is of 1500 tons burthen with engines of 580 horse power, and all the boilers and machinery so arranged as to be lower than the surface of the water. The engine works horizontally like a locomotive's. The cylinder is 7 feet in diameter with a four foot stroke. It is fitted with a screw and the wheel and pinion are therefore used. The wheel with the crank and axle weigh about 18 or 19 tons. It is 9 feet 10 inches inches in diameter and 4 feet broad on the hem. The hem is divided into three breadths of teeth, the middle row catching between the strokes of the teeth of the outside rows, in order to lessen the noise and friction each tooth occupies about 6 inches of the wheel, and what is not a little singular in that iron country, they are made of wood.—The engine is made to perform 30 strokes per minute and the screw to make 70 revolutions. This vessel is to be one of the finest pieces of workmanship ever finished in Mr. Napier's Foundry, but they do not calculate it to run more than 12 miles per hour.

New Hampshire Coal Mountain.

Some of the New Hampshire papers are ridiculing the reports instituted respecting the discovery of coal in the Osippee mountain.—Hardly a single appearance of coal formation is said to exist in the Granite State.

Steam Power for Factories.

The Naumkeag Steam Cotton Mill, in Salem, Mass., contains 27,600 spindles, driven by an engine of 400 horse power. It employs 575 hands, who receive in wages $120,000 a year, and manufactures 5,000,000 yards annually. This mill, we believe, is the largest in the country, having a capital of $600,000.

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Light and Colored Glass.

At the last meeting of the British Association for the advancement of Science, R. Hunt, Esq presented the following interesting statistics in relation to various experiments with colored glass :—

" On the colored glass employed in glazing the new Palm house in the Royal Botanic Garden at Kew. It has been found that plants growing in stove houses often suffer from the scorching rays of the solar rays, and great expense is frequently incurred in fixing blinds to cut off this destructive calorific influence. From the enormous size of the new Palm house at Kew, it would be almost impracticable to adopt any system of shades which would be effective—this building being 363 feet in length, 100 feet wide, and 63 feet high. It was, therefore, thought desirable to ascertain if it would be possible to cut off these scorching rays by the use of a tinted glass, which should not be objectionable in its appearance, and the question was submitted to Mr. Hunt. The object was to select a glass that should not permit those heat rays which are most active in scorching the leaves of plants to permeate it. By a series of experiments made with the colored juices of the palms themselves, it was ascertained that the rays which destroyed their color, belonged to a class situated at that end of the prismatic spectrum which exhibited the utmost calorific power, and just beyond the limits of the visible red ray. A great number of specimens of glass variously manufactured were submitted to examination, and it was at length ascertained that glass tinted green appeared likely to effect the object desired most readily. Some of the green glasses which were examined obstructed nearly all the heat rays—but this was not desired —and from their dark color these were objectionable, as stopping the passage of a considerable quantity of light, which was essential to the healthful growth of the plants. Many specimens were manufactured purposely for the experiments by Messrs. Chance of Birmingham, according to given directions, and it is mainly due to the interest taken by these gentlemen that the desideratum has been arrived at. Every sample of glass was submitted to three distinct set of experiments —1st. To ascertain, by measuring off the colored rays of the spectrum, its transparency to luminous influence. 2. To ascertain the amount of obstruction offered to the passage of the chemical rays. 3. To measure the amount of heat radiation which permeated each specimen The chemical changes were tried upon chloride of silver, and on paper stained with the green coloring matter of the leaves of the palms themselves.

The calorific influence was ascertained by a method employed by Sir John Herschell in his experiments on solar radiation. Tissue paper stretched on a frame was smoked on one side by holding it over a smoky flame and then while the spectrum was thrown upon it the other surface was washed with strong sulphuric ether. By the evaporation of the ether the points of calorific action were most easily obtained, as these dried off in well-defined circles long before the other parts presented any appearance of dryness. By these means it was not difficult, with care, to ascertain exactly the condition of the glass, as to its transparancy to light, heat, and chemical agency. The glass thus chosen is of a very pale yellow-green color, the color being given by oxide of copper, and is so transparent that scarcely any light is intercepted. In examining the spectral rays through it, it is found that the yellow is slightly diminished in intensity, and that the extent of the red ray is affected in a small degree, the lower edge of the red ray being cut off by it. It does not appear to act in any way upon the chemical principle, as spectral impressions obtained upon chloride of silver are the same in extent and character as those procured by the action of the rays which have passed ordinary white glass. The glass has, however, a very remarkable action upon the non-luminous heat rays, the least refrangible calorific rays. It prevents the permeation of all that class of heat rays which exists below and in the point fixed by Sir William Herschell, Sir H. Englefield and Sir J. Herschell, as the point of maximum caloric action. As it is to this class of rays that the scorching influence is due, there is every reason to conclude that the use of this glass will be effective in protecting the plants, and at the same time, as it is unobjectionable in point of color, and transparent to that principle which is necessary to the developement of those parts of the plant which depend upon external chemical excitation, it is only partially so to the heat rays, and it is opaque to those only which are most injurious. The absence of the oxide of manganese, commonly employed in all sheet glass is insisted on, it having been found that into glass, which manganese enters the composition of, will, after exposure for some time to intense sun-light, assume a pinky hue, and any tint of this character would completely destroy the peculiar properties for which this glass is chosen. Melloni, in his investigations on radiant heat, discovered that a peculiar green glass, manufactured in Italy, ob structed nearly all the calorific rays ; we may therefore conclude that the glass chosen is of a similar character to that employed by the Italian philosopher. The tint of color is not very different from that of the old crown glass, and many practical men state that they find their plants flourish much better under this kind of glass, than under the white sheet glass which is now so commonly employed.

Southern Metals.

The Delta (Geo.) Eagle, says :—"We learn that six hundred tons of copper ore are shortly to be shipped from here to Boston —It is found in great abundance and of the richest quality in Polk county, Tenn., and Cherokee county, N. C. where a company of Germans are engaged in working the mines. We have seen several of the links of ore at the Depot, which seem to be most the pure metal itself, The wagons are to commence hauling it next week."

We understand that this ore extends from that point in beds of various sizes and through a wide portion of Murray County. Operations are about to be commenced in Gilmer county by a former resident of Augusta, Geo. on a lot having a large supply of valuable ore of the same kind.

This ore also contains a considerable portion of silver which of itself will repay the labor of excavation. Every day is bringing to light new evidences of the great mineral resources of the Cherokee counties, which require only the application of capital and enterprise to render them prolific of wealth to the South.

" We saw," says the Fayetteville (N C.) Observer, " last week, some bars of lead, part of a quantity brought here for sale from the Washington Silver mine in Davidson county, by Roswell A. King, Esq. We learned from Mr. King, that the company has lately commenced the process of separating the lead from the silver ore, and that they will probably obtain about 25 tons per annum, for most of which there will be a market in the western part of our state. Heretofore, the lead and silver ore have been shipped without separation to the North. Now a great saving of expense is effected by preparing the lead at the mine."

An Austrian Palace.

Prince Liechenstein's residence at Vienna is a specimen of the immense cost of some of the Austrian palaces. A correspondent of the Newark Advertiser gives the following account of it.

" For a couple of hours I wandered through apartments filled with the most costly and luxurious furniture—reminding one of the fairy palaces described in the Arabian Nights. Mirrors covering the whole side of a room, chandeliers of rock crystal and gold, floors of polished wood laid in curious mosaic, statuary of Carrara marble, bronzes of rare workmanship, the walls covered with rich silk and gold brocade, ceiling of immense height painted in tresco and arabesque, staircases, halls, and columns of polished marble and gypsum, mosaic tables, &c. In a word, the interior decorations of this superb palace cost 8,000,000 florins, or 4,000,000 dollars—it far exceeds any two of the hundreds I have seen, and is superior to that of the Emperor's in splendor. Its princely inhabitant has an income of upwards of $1,000,000 yearly, and is the owner of ninety-nine estates and palaces. No subject of Austria can possess more than that number.

Tires of Railways.

The following remarks have been communicated by a correspondent of the Railroad Record .—" It was given in evidence, at an inquest recently held to decide upon the fatal results of an accident which occurred on the Great Western Railroad, that the fracture of the steel tire of the driving-wheels of some of their locomotives was by no means an unusual occurrence, and that even those tires sometimes snapped when the engines were not running. The dreadful effects of the accident in question make it evident that nothing should be omitted by which risk might be mitigated ; and to this end, among probably, many better suggestions, I beg to offer the following both as respects the cause and its removal. Those steel tires are dovetailed into the iron wheel and being let in hot it appears to be assumed that the sledge hammers of the forgers will cause the two metals —steel and iron—to become properly welded together. Now, this, Sir, I venture to dispute ; on the contrary; I am convinced nothing like a real cementation of the two metals will be affected. If this assumption be correct, it necessarily follows that the iron felloes of the wheel will be surrounded by a distinct steel hoop. Now, the transverse section and body of hoop is very small, compared with that of the felloes, or iron rim of the wheel, consequently, under the enormous pressure of a Great Western Locomotive, the steel hoop will have a tendency to roll out longitudinally more than the iron rim of the wheel ; and so rolling out or stretching, it must either fracture the felloes, or the iron rim itself, it is let into its dove-tailed bed very tight ; or it must become somewhat larger in diameter than the felloes of the wheel. If this latter be the result, we know that the wheel and the steel tire cannot, without a jerking back of the tire, make the same number of revolutions in any given distance. A tire so enlarged on an iron wheel, will, when the wheel is in revolution with a heavy load upon it, be rolled down tight into its bed at all points behind that of its contact with the rail ; and, at all points before that, it will be thrown partly up and forward out of its bed, by so much as it is larger in diameter than the felloes of the wheel. But when, from any cause—such as an increase of speed, or at some portion of its bed where the steel rim fits tighter—this kind of slipping of the large outer rim on the smaller inner one, can no longer be maintained, the outer, that is the steel rim, must snap, and its fractured pieces frequently fly off with great force. But it is stated that these tires sometimes snap when the engine is not in motion. Here the laws of expansion and cantraction, probably come into action. Supposing a steel tire not to have been rolled out, as previously assumed in running, then, when the engine comes to a rest the wheel will bring into the atmosphere the extra amount of heat it has acquired during its rapid journey, and though the contractive forces of iron and steel are, in like conditions, nearly the same, yet, the tire being the outside will cool the faster, and contract at first more than the body of the wheel ; and hence it may be likely enough to snap, when the hardness of the steel is considered. The converse of this even might account for the converse of these tires when running, without supposing there were any rolling out of the metal under the enormous load of the engine, with all its hammering on the rails. Now, if the cementation of the steel and the iron felloes of the wheel were perfect, the risk and apprehension of all such accidents would be obviated, and this occasions me to mention, that I some time back observed that a patent had been taken out by a Sheffield gentleman—I think of the name of Sanderson— for welding a steel plate of sufficient thickness on an iron bloom, and then rolling into bars. In fact it seemed to me that this was a plan for plating iron with steel, precisely on a similar method with that of plating copper with steel, as long practised in the well known sheffield ware. I have not been in the way of learning whether this patent has been successfully worked out, but it appears to me it migh be well worth the while of any railway company using steel tires to inquire."

Cork.

Many persons see cork used daily without knowing whence came those useful materials. Corks are cut from large slabs of the cork tree, a species of oak which grows wild in the countries south of Europe. The tree is stripped of its bark at about 15 years old, but before stripping it off, the tree is not cut down as in the case of the oak. It is taken while the tree is growing and the operation may be repeated every eighth or ninth year—the quality of the bark continuing each time to improve as the age of the tree increases. When the bark is taken off, it is singed in the flames of a strong fire, and after being soaked for a considerable time in water, it is placed under heavy weights in order to render it straight. Its extreme lightness, the ease with which it can be compressed, and its elasticity, are properties so peculiar to this substance, that no efficient substitute for it has been discovered. The valuable properties of cork were known to the Greeks and Romans, who employed it for all the purposes for which it is used at present, with the exception of stopples, the ancients most used cement for stopping the mouths of bottles or vessels. The Egyptians are said to have made coffins of cork, which being spread on the inside with a resinous substance preserved dead bodies from decay. In modern times, cork was not generally used for stopples to bottles till about the close of the 17th century, wax being used till then for that purpose. The cork imported into Great Britain is brought principally from Italy, Spain and Portugal. The quantity annually consumed is upwards of 500 tons.

Pingree's Comet.

Pingree's comet is just now about to make its appearance for the third recorded time, to the inhabitants of the earth. On the occasion of its former visits, it carried terror and dismay to the minds of kings and princes In 1264 it was considered as a messenger charged with the execution of sentence of death upon Pope Urban IV.

At its next return, the Emperor Charles V, of Germany and Spain, wrote of it, "*His ergo indiceis me mea fata vocant.*" It is said that he resigned his crown to prepare for the dreaded summons.

It has now been gone for another period of near three hundred years, and is soon to come back provided with an " arming" which will be as significant to the astronomer of what it has encountered in the depths of space, as is of the depths of the ocean, the sand to the mariner, which adheres to his lead.

But so far from its expected appearance, in 1848, being cause of dread and alarm to powers and potentates, its coming is looked for even by the multitude, with a degree of eager interest, and will be hailed with pleasure and delight in many lands.

From a mysterious stranger, bringing tidings of a dreadful, potent and awful calamity to a terror-stricken world, astronomy, by its progress, has changed in the minds of men the character of comets ; they have been made obedient to law, subservient, instructive and useful to man, in his upward and onward progress. They teach important truths, and assist to reveal the secrets of nature.—*Lieut. M. F. Maury.*

Apologue.

Near a dew-drop there fell a tear upon a tomb, whither a beautiful female repaired every morning to weep for her lover. As the sun's golden disk rose higher in heaven, his rays fell on the tear and dew drop, but glanced with a double brilliancy on the pearl shook from the tresses of Aurora. The liquid jewel, proud of its lustre, addressed its neighbor—" How darest thou appear thus solitary and lustreless?" The modest tear made no answer ; but the zephyr that just then wantoned near them, paused in its flight, brushed down with its wings the glittering dew-drop, and folding the humole tear of affection in its embrace, carried it up to heaven.

A fisherman in Baltimore lately fished up sixty dollars worth of jewelry. Good fishing that.

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TO CORRESPONDENTS.

"J. B. Esq. of Norfolk, Va."—Your package of papers were sent per Schooner Frank last Friday week.

"H. B. G. of Pa."—We could not comply with your request nor procure the article you desired in so small a quantity as you ordered, so we enclosed the money in a letter and sent it back about two weeks ago.

"B. J. of Va."—We cannot furnish you with that number of vol. 1, which you desire.

"D. B. of Mich."—You can be furnished with vol. 2 complete, but the first volume cannot be had.

"H. D. N. of Mass."—We think there is some novelty in your invention and we should like to publish a drawing of it. Please send a model to us or a perspective drawing and enclose $5 with it, and we will get it engraved and publish it. The block engraving will afterwards be yours.

"J. J. of Me."—We shall probably be able to furnish any number of one horse power engines, boilers and all, for the low price of $100 in the course of three or four weeks.

"M. P. of N. Y."—We are well aware that the donble guage is not new, but as regards the practicability of it, if we are to believe late accounts from England, all doubt is at an end. Mr. Wallace, we believe is an English C. E, and we think he is not, as you have observed, the *original and first inventor* of that system, although there may be some novelty in his plan that is unknown to us and has not been explained. This has been our opinion.

"J. B. of Mass."—You are correct in regard to the pressure of the air at the lower end of the pipe, but could it not be doubled and the other end united with the first pipe with a valve opening into it, and in this manner get the whole weight of the columns of air to assist the pump. Condensed air becomes hot, or rather gives out its heat and as it expands absorbs it.

"J. M. of N. Y."—Copal varnish is the best we know of for your purpose. Either muriatic or nitric acid will give tooth to the copper, but they must be very much diluted with water, and very great care exercised in its use

Patent Office.

An increase has been made in the Clerks of the Patent Office and we hope to see the accumulated business disappear so that inventors will get a decision upon their applications without waiting six months.

Brady's Daguerrian Gallery.

Those who desire a likeness taken which cannot be excelled by any other artist in this city, are recommended to the establishment of Mr. Brady, 205 Broadway. We have seen some of the best executed and most perfect likenesses of his taking we ever beheld. His manner of executing them is according to the most improved plan and we should not do him justice did we not pronounce his pictures the best we ever saw. His method of retaking pictures from other daguerreotype plates so that the duplicate will be as correct and perfect as the one from which he copies, is really surprising.

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For the Scientific American.

Enamel Colors and Fluxes.

Ultramarine is used in enamel where very bright blues are wanted, but there are few instances where zaffer (a mixture of cobalt) will not answer equally as well, that is if it is used with borax, and a little calcined flint to take off the fusible quality of the borax. The ultramarine requires no preparation when used in enamel painting, previously to being mixed with a flux.

Ultramarine ashes are used where light semi-transparent blues are wanted but these are often adulterated with precipitations of copper which turn green on fluxing and great care is therefore necessary in its use.

Zaffer is used to produce blue, green, purple and black colors on enamel. Zaffer, or as it is more usually known by the name of cobalt, assumes a strong blue color approaching to purple as it vitrifies. Cobalt is known to be good or bad only by trial and comparison with some that has proven to be good.

Red Enamel.—The protoxide of copper affords a fine red color, only it must be taken at the proper point of fusion. If this is raised to too high a temperature it may be brought back by adding some combustible matter such as tallow or charcoal. It is possible by pushing the heat in this way to reduce entirely a part of the oxide and the particles of the metal scattered over it, will look like a stone called *avanturine*. To procure the protoxide of copper pure, boil equal parts of sugar and the acetate of copper in four parts of water, a powder of red is deposited which after two hours boiling is set aside to settle and the precipitate washed and dried.

Purple Color.—A preparation of gold is used to make the *purpureus* color, which is done by dissolving fine gold in aqua regia and some tin dissolved in the same kind of spirit, aud after all effervescence has ceased, drop some of the gold solution into some water and some of the tin into the same, and a red precipitate will be the result which must be washed and dried and is then fit for use. Of course, a great or small quantity can be treated accordingly. This is the precipitate of gold. Crude tin is often used to precipitate the powder of gold without dissolving it in muriatic or nitro-muriatic acids.

A powder for red enamel may also be produced by using salt of tartar to deposit the gold instead of the salt of tin, and if it be not well washed from the salt, it will not answer for without washing it is the *aurum fulminies* from its explosive qualities. Volatile salts will also deposite the gold powder, and for a full description of which see our articles on Electro Gilding in former numbers of this paper.

Gold precipitated from acqua regia by copperas (sulphate of iron) has a fine appearance and is bright.

Yellow Color.—Silver preparation is used to produce a yellow enamel. Clovet says that a fine yellow is made by pure oxide of silver painted in a thin coat and fused along with some metallic flux, and another powder for this purpose is to calcine one ounce of the filings of silver to half an ounce of sulphur in a crucible, the sulphur being added aftor the silver is made red hot.

Green Color.—Copper in enamel painting is used for making both green and red colors, also blue. For green the oxide of chrome is most generally used and is allowed to be the best, but the *ferretto* or the sulphate of copper six times calcined is very fine. The appearance of the powder must be red. If copperas is dissolved in water and pearl ashes added, the precipitate makes a good yellow preparation and if mixed with cobalt makes a cheap green mixture.

Antimony is also used for yellow. Powdered bricks have also been used for compounding yellow colors in enamel, but they act just as ochre does in this respect and require a greater force of flux than the pure ochres or calcined iron. When they are used they should be chosen of the reddest color and of the softest and evenest tenure.

Blue clay fluxed makes a splendid deep and dark color and powdered brick and other fluxes make imitation agate.

Black enamel is made with the peroxide of manganese or peroxide of iron and cobalt.—Clay alone with protoxide of iron gives, according to Clovet, a fine black.

Lead is often used as a flux, but it should be carefully avoided for all ware intended for domestic use, and therefore for those enamels that are intended to stand exposure to acids or the effects of the atmosphere, it should be mixed always with calcined pounded flint or crystal.

A flux for common purposes is composed of red lead one pound, pearlash 6 ounces, and two ounces salt calcined together and afterwards reduced (for using as a flux) to powder.

A flux to vitrify a large portion of cobalt may be made of lead one pound, 6 ounces of pearlash, 4 ounces borax and 1 of arsenic.—This is a soft flux and will glaze with less heat than the preceding one, treated in the same manner.

A white flux is made with 1 pound of powdered flint glass, 6 ounces of pearlash, salt 2 ounces, borax one ounce. This is the flux that should be used along with those substances for making blue, crimson and purple and also for pure transparent white.

To Clean Colored Silks.

Put some white soap into boiling water and heat it until dissolved into a strong lather. At a hand heat put in the article. If strong it may be rubbed as in washing : rinse it quickly in warm water and add oil of vitriol sufficient to give another water a sourish taste, if for bright yellows, crimsons, maroons and scarlets, but for oranges, fawns, browns or other shades, use no acid. For bright scarlet use a solution of tin. Gently squeeze, and then roll it in a coarse sheet and wring it. Hang it in a warm room to dry, and finish it by calendering or mangling.

For pinks, rose colors, and thin shades, &c instead of oil of vitriol, or solution of tin, prefer lemon juice, or white tartar or vinegar.

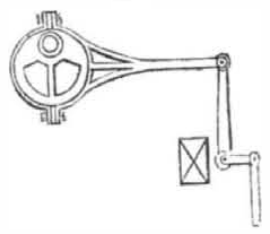
For blues, purples, and their shades, add a small quantity of American perlash ; it will restore the colors. Wash the articles like a linen garment, but instead of wringing, gently squeeze and shake them, and when dry, finish them with fine gum water, or dissolved isinglass, to which add some perlash rubbed on the side ; then pin them out.

Blues of all shades are dyed with archil and afterwards dipped in a vat; twice cleaning with perlash, restores the color. For olive-greens, a small quantity of verdigris dissolved in water or a solution of copper, mixed with the water, will very soon revive the color again.

[The above we have taken from one of our exchanges, it is not for us to say which one it was, as in all probability it might have been copied from some other. But we warn our readers against trying the efficacy of said receipts with anything valuable. It is too common a practice with our newspapers to pick up anything in the shape of receipts and publish them, leading some of their readers to try the experiment to their sad loss. If silks be rubbed on a wash-board their lustre will be spoiled forever. If silk be rubbed between the fingers its surface will be abraided and its fine gloss spoiled. Colored silks can only be washed in cold soap suds and the less they are rubbed the better. In fact colored silks never look well after being washed except they be restored in color by the Dyer. The least warmth of water will discharge the blue color of our common blues. It is only fugitive, made with the sulphate of indigo, and if the least particle of soda or pearlash be used in the water the color will disappear like snow in a thaw. Alum and the muriate of tin are the safest restoratives of colors. Purples, reds and scarlets can be safely treated with the muriate of tin. Blues, greens and yellows with alums. Silks are dressed by stretching them out on copper cylinders heated with steam, or frames full of small teeth, made so as to allow the silk to stretch in the drying. This process restores its shining appearance. It is stiffened with white glue.

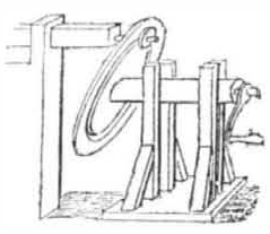
The calendar or the mangle would be a sad end for some silks. Frames called *lappet frames* are the kind that are used for dressing silk pieces.

MECHANICAL MOVEMENTS.



This is an arrangement well known to all who have seen the old and primitive engines as we have, where one of twelve horse power would occupy a whole four story building in height and nearly as many feet in length as it was in height. The plan in the above cut was for working the valve rods. The circular eccentric to the left revolves on the small centre on the upper part whereby the whole combination was moved and the jointed levers traversed at regular intervals to work the valves.

Circular and Traverse Motion.



This is an arrangement which produces an alternate traverse motion in the horizontal shaft to the left. The effect of this will at once be perceived. It is also a cam principle and shows the manner in which a circle may act the part of the cam as well as an eccentric. It is upon this principle also that uneven surfaces to patterns are turned in the lathe and by which patterns of any size can be taken. Thus according to the length of the shaft on the left if there was a pencil on the distant end of it tracing the curvature of the inclined disc, the motion of which produces the motion in the shaft, so will the size of the figure traced be in proportion to the length of the shaft and the only difference between the traverse motion in the shaft of the above cut, and the lever of the profile tracer, is that the first is stiff and the latter flexible —the principle of both is the same.

To Prepare Cocoa.

A cocoa drinker of some years standing, who has tried every description of the article which is sold, recommends all who desire a cheap, good, and unadulterated cup of this delightful beverage, to attend to the following directions :—Purchase at a respectable grocer's shop the bean, remove the outside skin or husk, which can easily be done by the fingers, then crush the nut as can be conveniently done by any hard substance. Let two or three teaspoonsful be put into three pints of water, and allowed to simmer on a slow fire for a couple of hours, and a cup of most delicious cocoa will be the result. Of course sugar, and cream or milk, must be added according to taste. If the cocoa be left on a slow fire at bed-time and warmed in the morning, it will obviate the necessity of occupying the fire for so long a period during the day, and it loses none of its flavor by being warmed a second time. This is decidedly the most economical way of preparing cocoa, for generally a second boiling produces as rich a beverage as the first.

To Varnish Drawings.

Boil some clear parchment cuttings in water, in a glazed earthen vessel till they produce a very clear size; strain it and keep it till wanted, then give the work two coats of the size, passing the brush quickly over the work, so as not to disturb the colors.

Or, mix one ounce of Canada balsam and two ounces of spirits of turpentine together, then size the print or drawing with a solution of isinglass in water and when dry apply the varnish with a camel's-hair brush.

Adulterated Medicine.

Silliman's Journal for January exposes the rascality of medicine, selling for the real simon pure, that is mixed with two-thirds of foreign matter. The most of the medicines referred to are imported from England. Quick silver is adulterated with Prussian blue and sand. Rhubarb with turmeric. The article oxide of zinc, is the carbonate of zinc Sulphur containing 80 per cent of lime. Opium and quinine adulterated two thirds. From the tone of the Journal we infer that there is not a single pure medicine sold here that is brought from Europe—that it is a trade to adulterate and manufacture for our markets. The best remedy is to take none of them.

German Yeast.

The yeast prepared by the Hungarians will keep a whole twelvemonth. During the summer season they boil a quantity of wheaten bran and hops in water ; the decoction is not long in fermenting, and when this has taken place they throw in a sufficient portion of the bran to form the whole into a thick paste, which they work into balls that are afterwards dried by a slow heat. When wanted for use they are broken and boiling water is poured upon them. Having stood a proper time, the fluid is decanted, and is in a fit state for leavening bread.—*Johnson's Eneyclopedia of Agriculture.*

Properties of Zinc.

By being melted and poured into water, has been found to assume new qualities; it becomes very malleable, losing none of its tenacity, but is capable of being spun into the finest wire, pressed into any required form, or rolled into any required thinness. This is a discovery by Prof. Farady, and will prove of very great importance.

Wooden Arm.

We see it stated in our exchanges that an ingenious mechanic of Paris has invented a wooden arm which is said to beat the natural limb itself. Its qualities are a little too highly colored, yet it is not difficult to believe that a very superior invention to the old iron club arms may have been made.

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